

## CLAIMS

1. A recombinant gene medicine of adenovirus vector and p53 gene for treating proliferative disease, wherein it is constructed by adenovirus vector and human tumor suppressor p53 gene expression cassette, and its recombinant sequence is:  
the right end of adenovirus 5 -  
ATGTTTACCGCCACACTCGCAGGGTCTGCACCTGGTGCGGGTCTCATCGTAC  
CTCAGCACCTTCCAGATC<sub>70</sub>TCTGACATGCGATGTGCGACTCGACTGCTTCGCG  
ATGTACGGGGCCAGATATACGCGTATCTGAGGGGACTAGGGTGTGTTTAGGGCG  
10 AAAAGCGGGGCTTCGGTTGTACGCGGTTAGGAGTCCCCTCAGGATATAGTAG  
TTTCGCTTTTGCATAGGGAGGGGGGAAATGTAGTCTTATGCAATACTCTTGTAG  
TCTTGCAACATGGTAACGATGAGTTAGCAACATGCCTTACAAGGAGAGAAAAA  
GCACCGTGATGCCGATTGGTGGAAAGTAAGGTGGTACGATCGTGCCTTATTA  
GGAAGGCAACAGACGGGTCTGACATGGATTGGACGAACCACTGAATTCCGCA  
15 TTGCAGAGATATTGTATTTAAGTGCCTAGCTCGATAACAATAAACGCCATTTGAC  
CATTCACCACATTGGTGTGCACCTCCAAGCTTGGTACCGAGCTCGGATCCCG<sub>5</sub>  
<sub>23</sub>CTAGAGCCACCGTCCAGGGAGCAGGTAGCTGCTGGGCTCCGGGGACACTT  
TGCGTTCGGGCTGGGAGCGTCTTTCCACGACGGTGACACGCTTCCCTGGATT  
GGCAGCCAGACTGCTTTCCGGGTCACTGCC<sub>655</sub>ATGGAGGAGCCGCGAGTCAGA  
20 TCCTAGCGTCGAGCCCCCTCTGAGTCAGGAAACATTTTCAGACCTATGGAAAC  
TACTTCCTGAAAACAACGTTCTGTCCCCCTTGCCGTCCCAAGCAATGGATGAT  
TTGATGCTGTCCCCGGACGATATTGAACAATGGTTCACTGAAGACCCAGGTC  
CAGATGAAGCTCCCAGAATGCCAGAGGCTGCTCCCCCGGTGGCCCCCTGCAC  
CAGCAGCTCCTACACCGGCGGGCCCCCTGCACCAGCCCCCTCCTGGCCCCCTGT  
25 CATCTTCTGTCCCTTTCCAGAAAACCTACCAGGGCAGCTACGGTTTCCGTCTG  
GGCTTCTTGCAATTCTGGGACAGCCAAGTCTGTGACTTGCACGTACTCCCCCTG  
CCCTCAACAAGATGTTTTGCCAACTGGCCAAGACCTGCCCTGTGCAGCTGTG  
GGTTGATTCCACACCCCCGCCCGGCACCCGCGTCCGCGCCATGGCCATCTA  
CAAGCAGTCACAGCACATGACGGAGGTTGTGAGGCGCTGCCCCCACCATGA  
30 GCGCTGCTCAGATAGCGATGGTCTGGCCCCCTCCTCAGCATCTTATCCGAGTG  
GAAGGAAATTTGCGTGTGGAGTATTTGGATGACAGAAACACTTTTCGACATAG  
TGTGGTGGTGCCCTATGAGCCGCCTGAGGTTGGCTCTGACTGTACCACCATC  
CACTACAACATCATGTGTAACAGTTCCTGCATGGGCGGCATGAACCGGAGGC  
CCATCCTCACCATCATCACACTGGAAGACTCCAGTGGTAATCTACTGGGACG  
35 GAACAGCTTTGAGGTGCGTGTTTGTGCCTGTCTGGGAGAGACCGGCGCACA  
GAGGAAGAGAATCTCCGCAAGAAAGGGGAGCCTCACCACGAGCTGCCCCCA  
GGGAGCACTAAGCGAGCACTGCCCAACAACACCAGCTCCTCTCCCCAGCCAA  
AGAAGAAACCACTGGATGGAGAATATTTACCCCTTCAGATCCGTGGGCGTGA  
GCGCTTCGAGATGTTCCGAGAGCTGAATGAGGCCTTGGAACCTCAAGGATGCC  
40 CAGGCTGGGAAGGAGCCAGGGGGGAGCAGGGCTCACTCCAGCCACCTGAA  
GTCCAAAAAGGGTCAGTCTACCTCCCGCCATAAAAACTCATGTTCAAGACAG  
AAGGGCCTGACTCAGACTGA<sub>1837</sub>CATTCTCCAATTCTTGTTCCTCCCACTGACAGC  
CTCCACCCCCATCTCTCCCTCCCCTGCCATTTTGGGTTTTGGGTCTTTGAAC

CCTTGCTTGCAATAGGTGTGCGTCAGAAGCACCCAGGACTTCCATTTGCTTTG  
 TCCCGGGGCTCCACTGAACAAGTTGGCCTGCACTGGTGTGTTTGTGTGGGGA  
 GGAGGATGGGGAGTAGGACATACCAGCTTAGATTTTAAGGTTTTTACTGTGAG  
 GGATGTTTGGGAGATGTAAGAAATGTTCTTGCAGTTAAGGGTTAGTTTACAAT  
 5 CAGCCACATTCTAGGTAGGGGCCACTTCACCGTACTAACCAGGGAAGCTGTC  
 CCTCACTGTTGAATTTTCTCTAACTTCAAGGCCCATATCTGTGAAATGCTGGAT  
 TTGCCCTACCTCGGAATGCTGGCATTGTCACCTACCTCACAGAGTGCATTGTG  
 AGGGTT<sub>2297</sub>AATGAAATAATGTACATCTGGCCTTGAAACCACCTTTTATTACATG  
 GGGTCTAGCGGGATCCACTAGTAACGCCGCCAGTGTGCTGGAATTCTGCAGA  
 10 TATCCATCACACTGGCGGCCGCTCGAGCATGCATCTAGAGCTCGCTGATCAG  
 CCTCGACTGTGCCTTCTAGTTGCCAGCCATCTGTTGTTTGGCCCTCCCCCGTG  
 CCTTCCTTGACCCTGGAAGGTGCCACTCCCACTGTCCTTTCCTAATAAAATGA  
 GGAAATTGCATCGCATTGTCTGAGTAGGTGTCATTCTATTCTGGGGGGTGGG  
 GTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCATGCT  
 15 GGGGATGCGGTGGGCTCTATGGCTTCTGAGGCGGAAAGAACCAGCTGGGGC  
 TCGAGGGGGATCCCCACGCTAGAGCT<sub>2733</sub>GACTATAATAATAAAACGCCAACT  
 TTGACCCGGAACGCGGAAACACCTGAGAAAAACACCTGGGCGAGTCTCCAC  
 GTAAACGGTCAAAGTCCCCGCGGCCCTAGACAAATATTA<sub>2848</sub>- the left end of  
 adenovirus 5,

wherein:

- 1) the right end of adenovirus 5 and the left end of adenovirus 5 are described in the full sequence of adenovirus 5 (Genbank No: NC\_001406)
- 2) 1-70: the right arm of adenovirus (the 70<sup>th</sup> base locates at adenovirus gene sequence 3328)
- 3) 71-523 : Rous Sarcoma Virus (RSV) LTR (promoter)
- 4) 524-655: 5' end non-translating region
- 5) 656-1837: p53 gene coding sequence
- 6) 1838-2733: 3' end non-translating region (poly Adenosine tail starting at 2298)
- 2734-2848: the left arm of adenovirus (base at 2734 is positioned at 452 of adenovirus 5 gene sequence).

2. The recombinant gene medicine according to Claim 1, wherein the gene expression cassette of the recombinant is a specific sequence composed of promoter-p53cDNA-poly adenosine.

3. The recombinant gene medicine according to claim 2, wherein the upstream of the gene expression cassette is any eukaryotic cell promoters, prokaryotic cell promoters or virus promoters, and the downstream is any of the eukaryotic gene poly adenosine residues (Poly A tail).

4. The recombinant gene medicine according to claim 1, wherein the recombinant gene medicine is obtained in prokaryotic cells by homologous recombination, including:

- 1) the recombinant pGT-2 is obtained by homologous recombination of adenovirus and plasmid pGT-1 (containing two inverted terminal repeats on both ends of adenovirus) in *E. coli*;
  - 2) the recombinant pGT-3 is obtained by homologous recombination of pGT-2 and artificial sequence "the right arm of adenovirus/ promoter-p53cDNA-poly A / the left arm of adenovirus " in *E. coli*;
  - 3) The recombinant p53 adenovirus is obtained by discarding the prokaryotic sequence using endonuclease *PacI*.
5. The recombinant gene medicine according to claim 4, wherein the recombinant gene medicine is obtained in any prokaryotic cells by homologous recombination.
6. The recombinant gene medicine according to claim 1 is used to produce injection solution.
7. The recombinant gene medicine according to claim 6 is used to produce injection.